HPNS

Hunters Point Naval Shipyard

Department of the Navy
Base Realignment and Closure (BRAC)

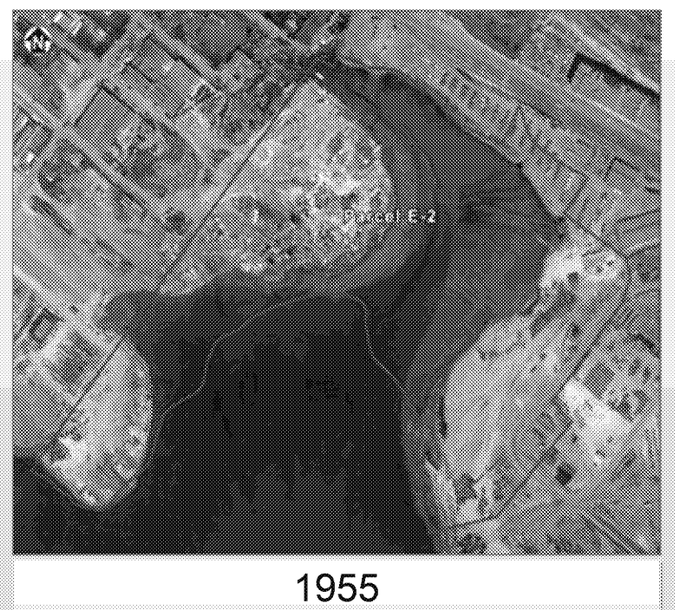
Parcel E-2 Overview

Parcel E-2 History

Parcel E-2 is located in the southwest portion of Hunters Point Naval Shipyard (HPNS), and includes approximately 48 acres of shoreline and lowland coastal area. Between the 1940's and 1960's, the edges of the San Francisco Bay were filled with various materials to create Parcel E-2. These materials included crushed bedrock, dredged sediments, construction debris, soil and trash/industrial waste.

Construction of Parcel E-2 Over Time

1946



1955

1969

1974

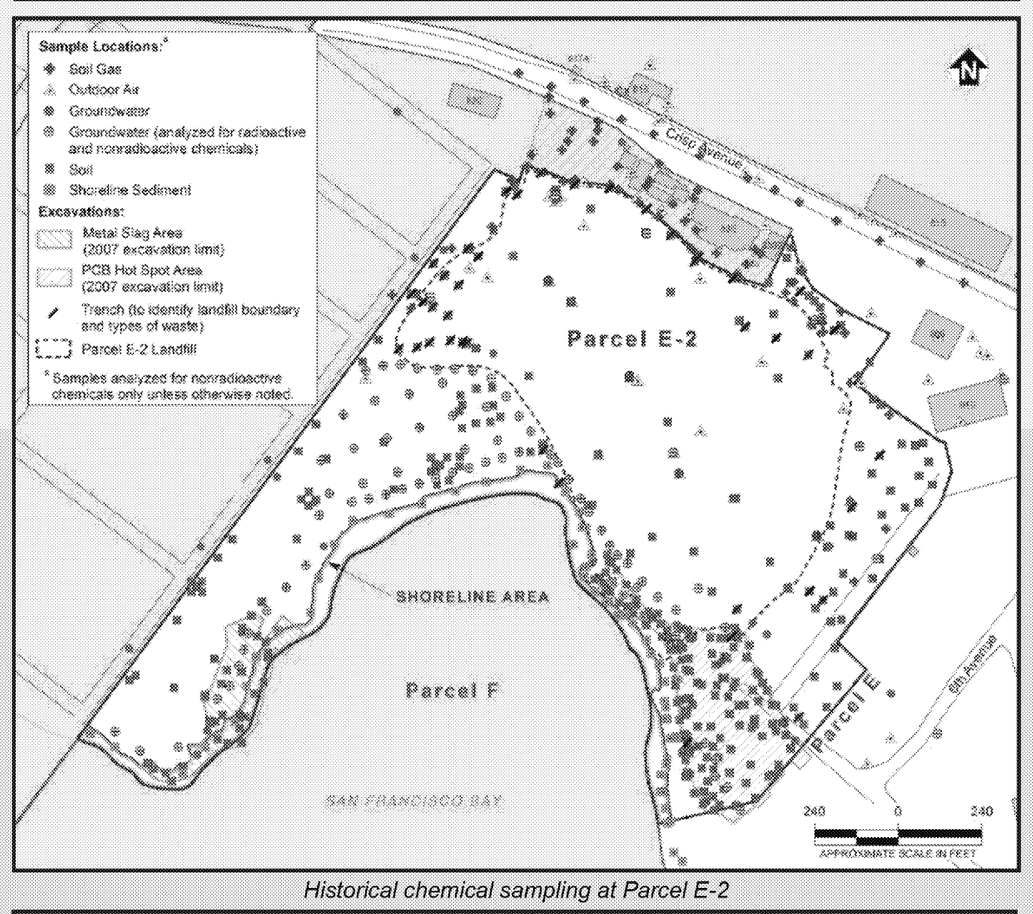
Parcel E-2 is the historical landfill for the shipyard. A variety of shipyard-related wastes were disposed of in the landfill, including:

⇒ construction debris (wood, steel, concrete, and soil)
⇒ municipal trash (paper, plastic, glass, and metal)
⇒ industrial waste (sandblast waste, low-level radioactive material, paint sludge, solvents, and waste oils)

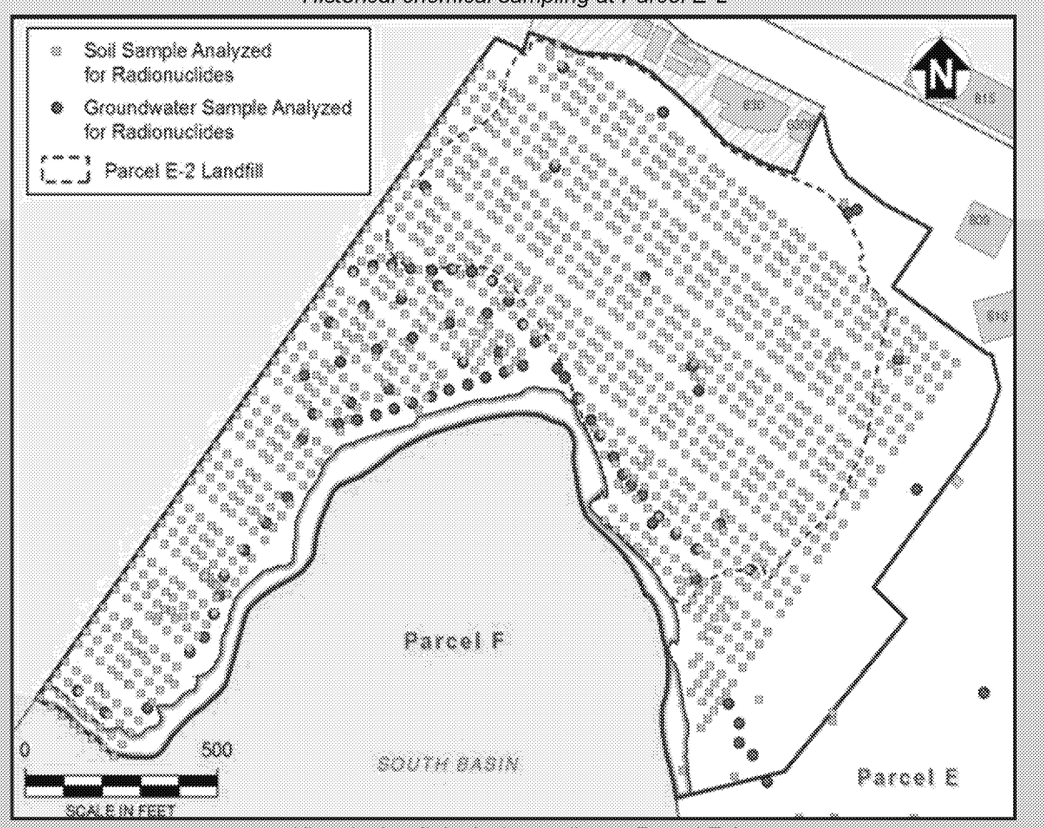
Cross-section of landfill trench

Historical Environmental Investigations at Parcel E-2

Between 1988 and 2008, environmental investigations were conducted at Parcel E-2, resulting in thousands of soil and groundwater samples, radiological soil and groundwater samples, soil gas, and outdoor air samples. Maps of these historical samples are shown below. The Navy is continuing to collect additional samples during the current cleanup activities.



Historical chemical sampling at Parcel E-2



Historical radiological sampling at Parcel E-2

Contaminants of Concern (COCs) at Parcel E-2

⇒ metals
⇒ asbestos
⇒ pesticides/herbicides
⇒ polychlorinated biphenyls (PCBs)
⇒ radionuclides
⇒ total petroleum hydrocarbons (TPH)
⇒ volatile organic compounds (VOCs)

The CERCLA Cleanup Process at Parcel E-2

Preliminary Assessment / Site Inspection (PA/SI)
complete

Remedial Investigation / Feasibility Study (RI/FS)
complete

Proposed Plan
Public Comment Period
September 7—November 21, 2011
complete

Record of Decision (ROD)
Signed March 15, 2012
complete

Remedial Design / Remedial Action (RD/RA)
current phase

Site Monitoring / Maintenance
future

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Current Cleanup at Parcel E-2

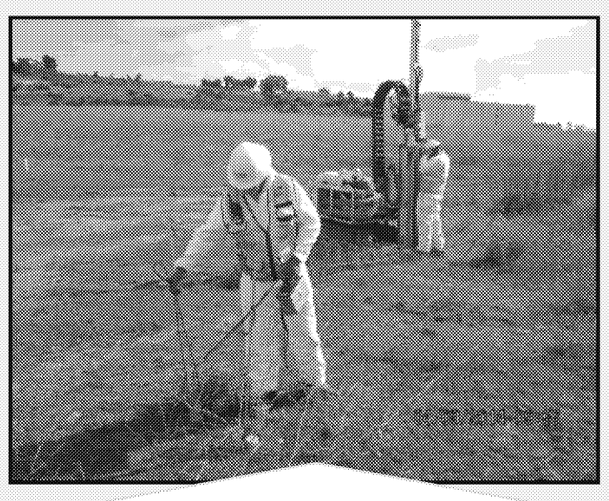
Parcel E-2 Cleanup Overview

The Navy previously removed several polychlorinated biphenyl (PCB) contaminated areas at Parcel E-2, resulting in the removal of approximately 5,500 truckloads of soil and sediment containing PCBs. Currently, the Navy is removing additional contamination that has elevated concentrations of total petroleum hydrocarbons (TPH) and metals (copper and lead) in the subsurface. The Navy is removing contaminated soil and sediment and collecting additional samples from the excavation sidewalls and bottom to ensure that remaining soil meets the site cleanup goals.

Current Excavations at Parcel E-2

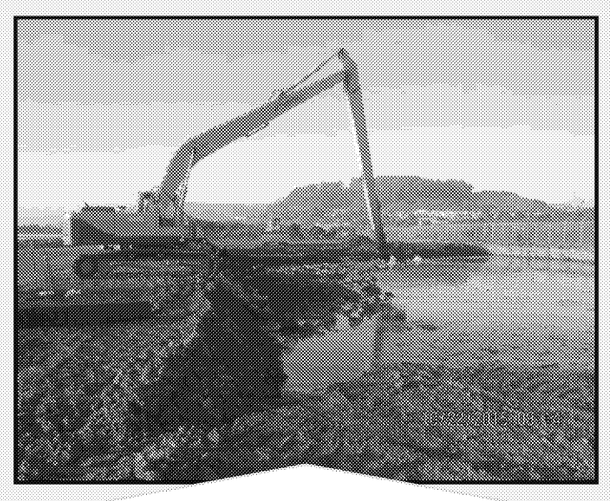
The Navy is continuing to clean up the contamination at Parcel E-2

- ⇒ Drilling and sampling of 19 identified excavation areas began in February 2015
- ⇒ As of November 2015, approximately 2,850 truckloads of soil and debris have been excavated from the 19 identified excavation areas
- ⇒ A slurry wall, which will help to minimize potential contaminants from migrating into San Francisco Bay from the landfill, is currently under construction
- ⇒ The cleanup at these focused excavation areas and installation of the slurry wall will continue during the winter of 2015, and is scheduled to be completed in 2016

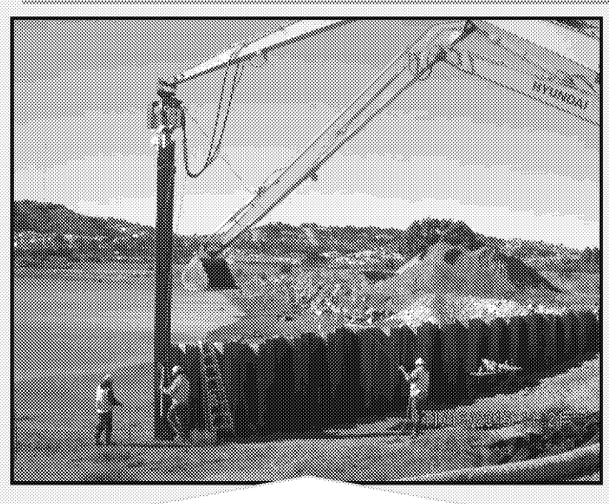


Characterization drilling and radiological screening of soil at Parcel E-2 focused excavations is conducted before excavation begins

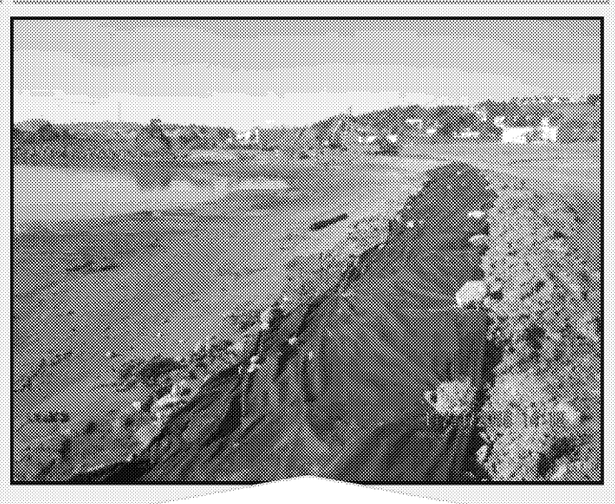
Radiological screening of soil cores ensure contaminated soil is excavated and removed using proper safety procedures



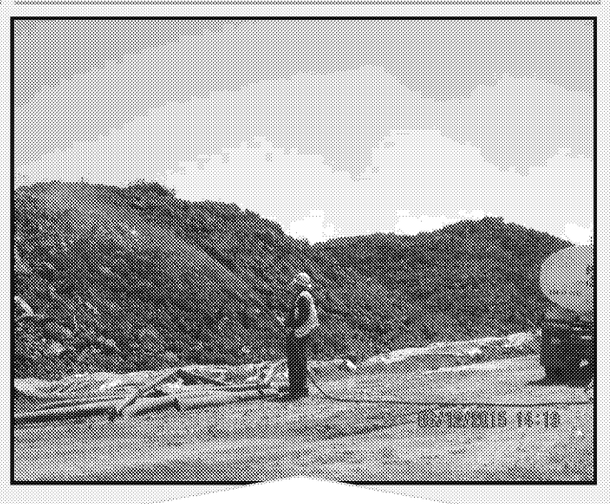
Excavation of soil and sediment at Parcel E-2 will remove contaminated material from the subsurface



Shoring installation during construction of the slurry wall

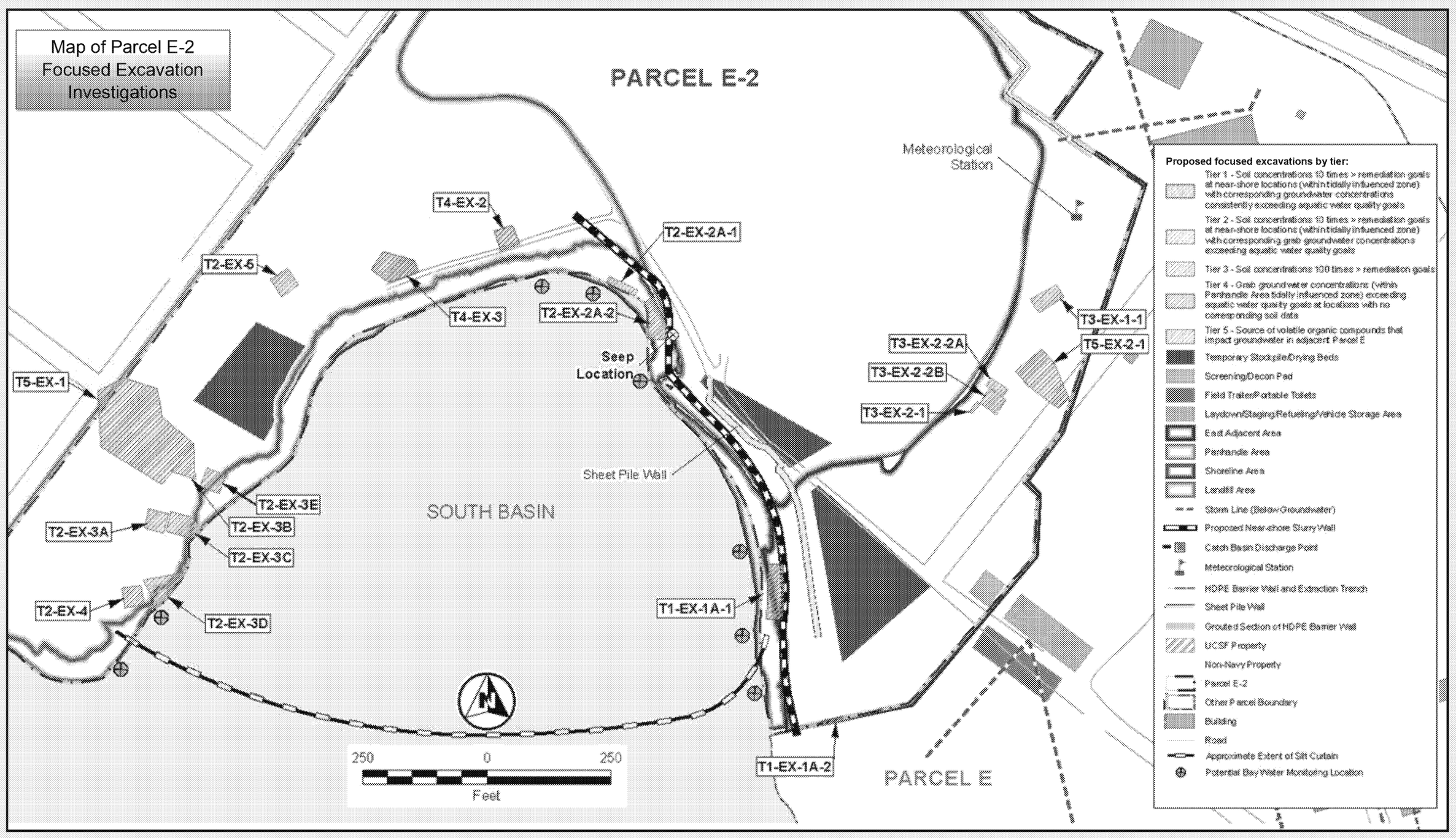


Temporary erosion controls are placed along shoreline during construction of the slurry wall



Soil piles are sprayed down to minimize dust in accordance with the HPNS dust control measures

Map of Parcel E-2 Focused Excavation Investigations



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Future Cleanup at Parcel E-2

Remedial Actions at Parcel E-2

Below is a summary of the primary components of the Navy's cleanup plan for Parcel E-2. The first two bullets will be completed in 2015.

- ⇒ Excavate and dispose of soil in focused contamination areas (complete in 2015)
- ⇒ Install underground barrier (slurry wall) along the shoreline between Parcel E-2 and the San Francisco Bay to limit contaminated groundwater flow (complete in 2015)
- ⇒ Install slurry wall and gravel drain (French Drain) north of the landfill to minimize groundwater entering the landfill
- ⇒ Install a protective liner and soil cover over the landfill and in surrounding areas
- ⇒ Remove and treat landfill gas
- ⇒ Build a shoreline rock wall (revetment)
- ⇒ Build new wetlands
- ⇒ Professionally monitor and manage the site after the remedy is in place

Installation of a Protective Liner and Soil Cover

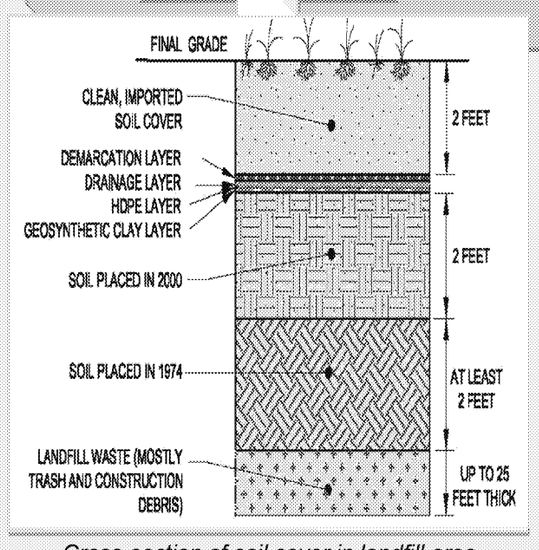
During the Proposed Plan, the Navy reviewed several options for cleaning up the contamination in the landfill. The selected remedy was approved by the regulatory agencies and involves containment of the landfill by placing a protective cover of clean soil over the area.

Landfill Area

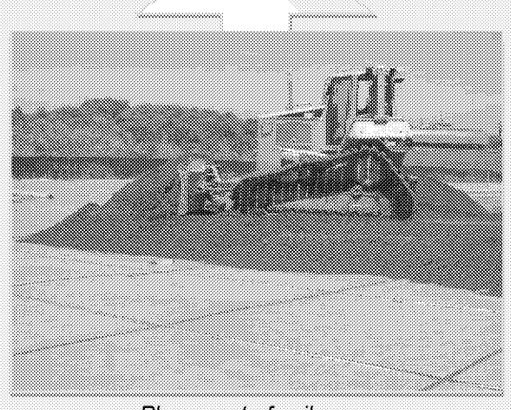
- ⇒ Placing a protective liner followed by two feet of clean soil
- ⇒ Planting native grasses on top of the clean soil

Wetlands Area

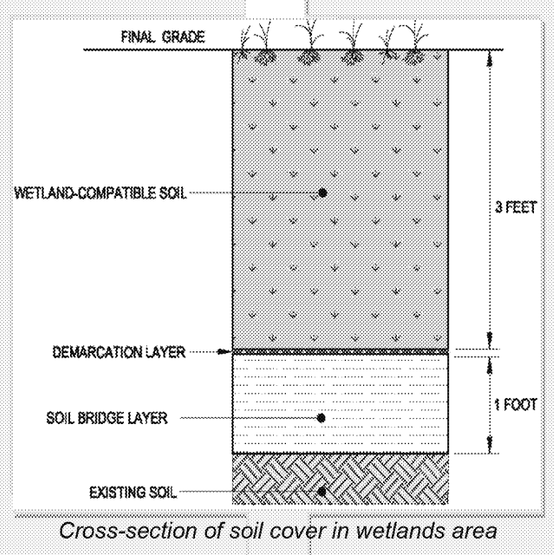
- ⇒ Excavating the new wetland areas, shoreline rock wall area, and new storm water channels
- ⇒ Screening all excavated soil for radiological contamination
- ⇒ Placing a liner and three feet of clean soil over the proposed wetland areas



Cross-section of soil cover in landfill area



Placement of soil cover



Cross-section of soil cover in wetlands area

Remove and Treat Landfill Gas

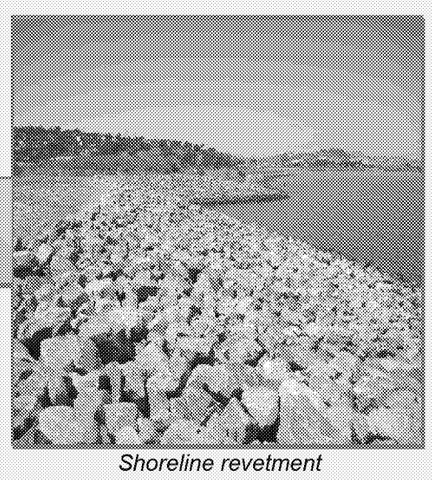
Landfill gas is created when buried debris, such as wood and paper, decomposes. The Navy will use a landfill gas control system to collect and treat landfill gas.

- ⇒ An existing landfill gas control system will be integrated into the new system
- ⇒ A network of 39 new gas extraction wells will be connected to underground piping
- ⇒ Landfill gas will be treated on-site for both organic chemicals (like benzene) and methane

Build a Shoreline Revetment

A rock wall, known as a revetment, will be built along the Parcel E-2 shoreline to prevent contaminated soil from entering San Francisco Bay, as well as to contain the landfill waste along the shoreline and prevent erosion.

- ⇒ The revetment will be 1,800 feet long, 35 feet wide, and 9 feet above mean sea level.
- ⇒ A 3-foot high sea wall will be built at the top of the revetment to prevent waves from overtopping the rock wall during extreme conditions.



Shoreline revetment

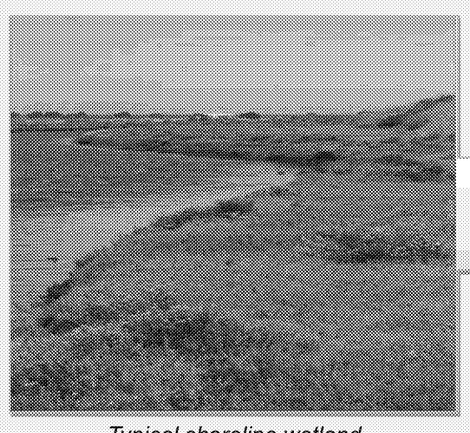
Creation of Wetlands

Wetlands are land with wet soil and vegetation that are frequently flooded and provide habitat for various birds and other wildlife. As a part of the Remedial Design, the Navy will build two wetlands to replace existing wetlands that contain contaminated sediment and will be damaged or removed during the cleanup process.

A **Freshwater Wetland**, approximately 1.59 acres in size, will consist of a pond that receives water from below-ground gravel drain and surface runoff. The edge of the pond will be planted with native species.

A **Tidal Wetland** will be constructed in an area next to the San Francisco Bay that will be flooded with Bay waters during high tides. This 3.18 acre wetland will also be planted with native species.

The new wetlands will be provide a habitat for native species



Typical shoreline wetland

Long-term Management of the Remedy

When cleanup at Parcel E-2 is complete, the Navy will implement a comprehensive monitoring program to support the City of San Francisco's redevelopment plans (depicted below).

The management plan includes:

- ⇒ regular inspection and maintenance of all parts of the remedy;
- ⇒ inspection and enforcement of land use and institutional controls; and
- ⇒ inspection of the conditions of the remedy in the event of an earthquake or another significant natural event.

Conceptual drawing of the redevelopment of the shipyard

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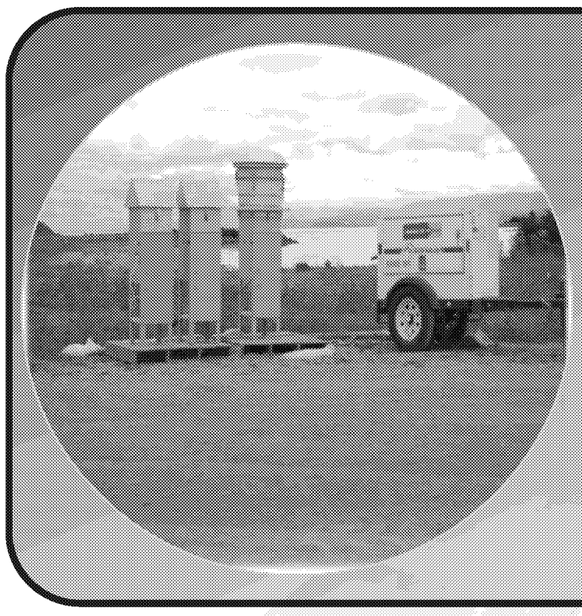
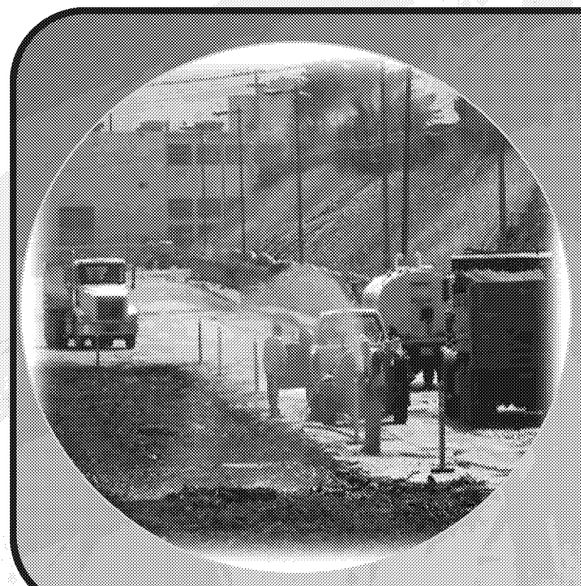
Protecting the Public

The Navy has several on-site controls and procedures in place at Hunters Point Naval Shipyard (HPNS) to ensure public safety.



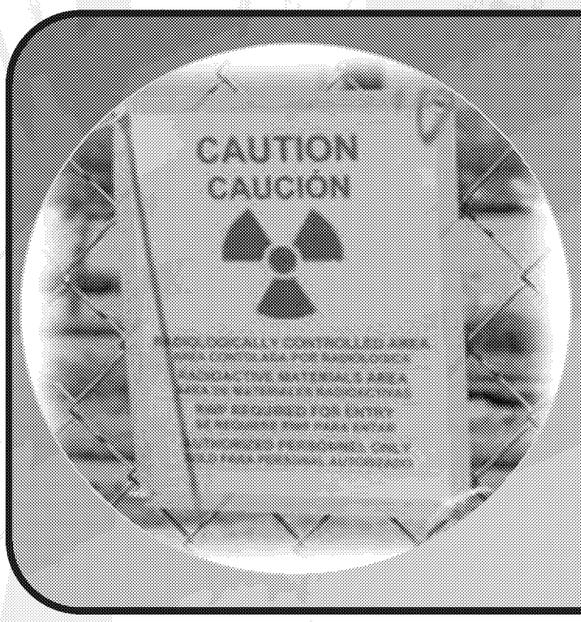
Conducting Air Monitoring

The Navy monitors for both particulates and radiological contamination with on-site air monitors



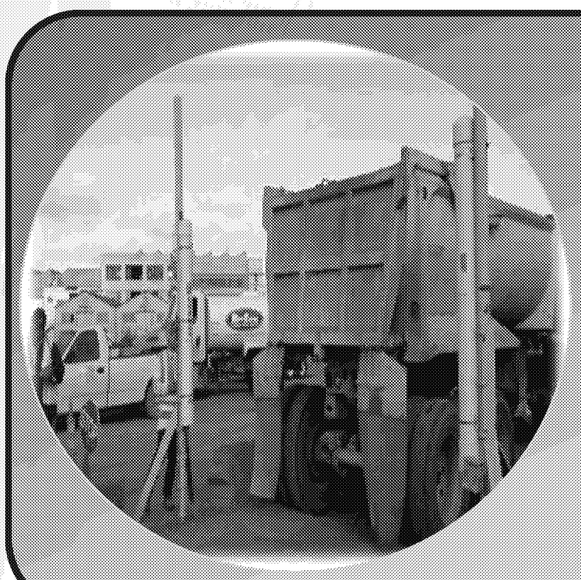
Implementation of Dust Control Measures

Dust is controlled to contain contamination within the restricted areas



Establishing Radiologically Controlled Areas

Public access to all work areas is restricted and only specially trained personnel are permitted to access radiological controlled work areas



Utilization of a Portal Monitor to Screen Trucks for Radiation

Trucks entering and leaving HPNS must pass through a portal monitor which screens for radiation

Comprehensive Evaluation

The Navy follows a carefully designed plan at HPNS that ensures effective cleanup in a time-sensitive manner with public safety as a priority.

The California Department of Public Health collects its own confirmation samples from radiological cleanup sites for independent verification.

Multiple agencies participate in the radiological investigations and remediation at HPNS.

United States Navy Naval Facilities Engineering Command (NAVFAC)

United States Environmental Protection Agency (USEPA)

California Department of Toxic Substances Control (DTSC)

San Francisco Bay Regional Water Quality Control Board (Water Board)

California Department of Public Health (CDPH)